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November 5, 2020
CiS No.**: 20103d-i**

Ms. Emily Morse
Lewis Creek Builders
18A Morse Dr
Essex Junction, VT 05452

Re: **Garage Inspection & Structural Evaluation**
Home of Kellen Brumstead & Katie Mason
Property Located At: 40 Kingsland Terrace (Burlington VT)

To Whom It May Concern:

At the request of Ms. Emily Morse (Lewis Creek Builders), **CiS** inspected exposed/accessible elements of the building referenced above (PHOTO 1). The purpose of the October 29, 2020, inspection was to inspect and evaluate the detached garage, to assess its structural condition and to determine whether it is safe, sound and stable.

The garage is a single story, wood framed structure supported on, what appears to be, a combination grade wall/grade slab foundation system. The wood framed superstructure appears to be in good condition and structurally sound, with little to no evidence of distress and/or deterioration other than some minor wracking (structural lean) to the left/west. The wracking (PHOTO 1) has caused the garage door opening to be skewed to the west so that it may be difficult to install a fully functional, fully operable garage door without first pulling the garage structure back into place; an effort that would be futile unless the foundation system is repaired and/or replaced (see below).

While an analysis of the building superstructure was not performed at this time, it is likely that such an analysis would show the structural capacity (framing) to be at, or just below, minimum standards for load carrying capacity, as required by the current Code (2015 International Building Code). If that is the case then existing roof framing may have to be reinforced to ensure that the building has a load carrying capacity conforming to the current Code and standards.

Unlike the superstructure, the grade slab/grade wall foundation system is in extremely poor condition with evidence of severe cracking of the slab (and vertical displacement of abutting slab sections – PHOTOS 3 & 4) and a severe vertical crack (with significant lateral separation – PHOTOS 2 & 4) in the exposed section of grade wall, supporting the west side of the building. The slab cracking and displacement are significant enough so as to discourage use of the garage for anything other than general, non-vehicle, storage. In addition to slab cracking/vertical displacement and the grade wall crack, it appears that the west side of the building has settled; a condition that most likely caused the building to wrack towards the west (noted above) and that caused damage to (buckling of) some of the siding on the west wall (PHOTO 2).

Damage to the slab/grade wall appears to be attributable to two primary factors: a foundation depth that does not extend below frost line (allowing structure to heave and settle in response to ground frost) and the apparent lack of any reinforcement of either slab or grade wall.

Unfortunately, there is no reasonable, economical way to repair the garage slab and/or grade wall "in place". As a result, both the slab and grade wall should be replaced with a proper, Code compliant, slab and foundation system; a foundation system (frost walls and footings) that is reinforced with steel and that extends down below the seasonal frost line. The slab could then be cast separate from the foundation walls and allowed to "float" on the soil below. The slab may or may not have to be reinforced depending on quality of the bearing soils. Although there may be several alternatives for constructing the new slab and foundation system, it seems that the most likely process would be to lift (jack) and temporarily move the existing wood framed structure before demolishing existing foundation elements and constructing the new foundation. The building could then be moved back into place and properly anchored to the new foundation.

In summary and based on a personal observation of exposed and accessible elements of the building it is felt that while the wood framed superstructure can be restored to full use and function with limited repair and/or reinforcement, the existing slab/foundation system has deteriorated to a level where it is beyond repair so that the only path to restoring the building to full use and function would be to replace the existing slab/foundation system with a new, Code compliant system that is properly reinforced and properly supported below the frost line.

Please note that opinions and/or conclusions provided hereunder are based on a review of "best available information" at the time of the inspection and that they are subject to further review and/or revision should additional information become available.

CiS appreciates having had the opportunity to assist you with this inspection/assessment and we hope that you will keep us in mind if we can be of assistance at some future date.

Respectfully submitted,

Roland Van Dyk

Roland VanDyk, P.E.

PHOTO 1: South Side - Note slight wracking of building to the left (west) side

PHOTO 2: West Side - Note buckled siding and vertical crack in foundation/slab

PHOTO 2: Slab - note extensive cracking and vertical displacement

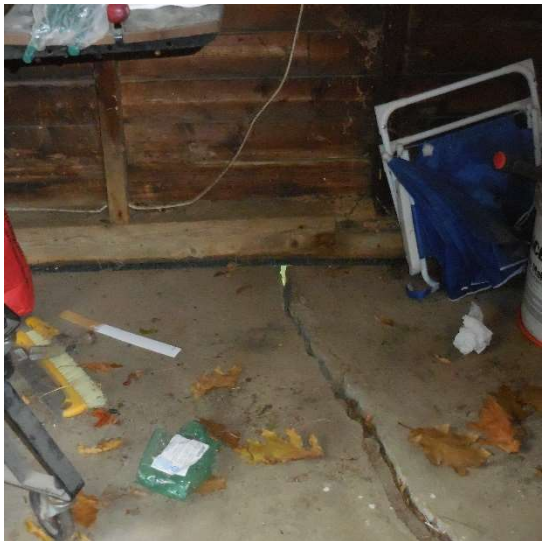

PHOTO 4: Slab - Note width of crack and visible daylight at end of crack where it becomes the foundation on west side